Claims

[c0001] 1. A method of inputting alphabetic text to an electronic device having a virtual keyboard on a touch-sensitive screen, said virtual keyboard includes a set of keys wherein each letter of the alphabet is associated with at least one key, the method comprising:

recording a contact action on the virtual keyboard, wherein the contact action includes an initial contact location, a path along which contact with the touch-sensitive screen continues, and a final contact location at which contact with the touch-sensitive screen is removed,

forming an input stroke pattern according to said recorded contact action;

comparing said input stroke pattern with one or more words of a set of words stored in a database, one or more of said set of words associated with an indication of frequency, wherein comparing includes comparing a sequence of locations of the keys associated with the letters comprising the spelling of a word with said input stroke pattern;

identifying one or more words stored in the database wherein one or more letters of the identified word are

each associated with keys that are within a determined threshold distance of the path of the contact action; determining a numerical score for each of the identified one or more words to establish a relative ranking of the words according to the comparison and the frequency associated with the word.

[c0002] 2. The method of Claim 1, further comprising offering one or more of the highest ranked words of said determined relative ranking to the user for selection of the word to be input as text.

[c0003] 3. The method of Claim 1, further comprising comparing the numerical scores determined for the highest ranked word and the second-highest ranked word, and generating the highest ranked word as text to be input when the comparison between the numerical scores exceeds a determined threshold.

[c0004] 4. The method of Claim 1, further comprising determining a sequence of two or more points of inflection along the path of said input stroke pattern, said two or more points of inflection including at least one point at or near said initial contact location and one point at or near said final contact location, and wherein at least two or more of said points of inflection are each matched with a key that is associated with at least one letter of the com-

pared word, wherein each key is within a maximum threshold distance of the inflection point with which it is matched, and wherein the points occur in the same sequence in the path as the associated letters occur in the spelling of the compared word.

[c0005] 5. The method of Claim 4, wherein said numerical scoring of said word is calculated as a function of the sum of the distances from each determined point of inflection along the path to the key associated with each corresponding matched letter.

[c0006] 6. The method of Claim 5, wherein the distance to a key associated with a letter in the spelling of the compared word that is not matched with a point of inflection is measured from a determined point along the input stroke pattern that lies between the points from which the distances to the letters immediately preceding and following the unmatched letter are measured, and wherein said distance is included in said sum of distances in calculating said numerical scoring of said word.

[c0007] 7. The method of Claim 6, wherein the indication of frequency stored in said database with said word is included in calculating said numerical scoring of said word.

[c0008] 8. The method of Claim 7, wherein the distance from the key associated with a letter in a possible candidate word to a matching point in the input stroke pattern is weighted according to one or more characteristics determined for the matching point before being added to said sum of distances.

[c0009] 9. The method of Claim 8, wherein one of said characteristics is the type of inflection point with which the key associated with a letter in a possible candidate word is matched.

[c0010] 10. The method of Claim 8, wherein one of said characteristics is the magnitude of the sum of the absolute values of second differences of the x and y coordinates at the point with which the key associated with a letter in a possible candidate word is matched.

[c0011] 11. The method of Claim 8, wherein the magnitude of the distance from a first key associated with a letter in a possible candidate word to a first matching point in the input stroke pattern is adjusted according to one or more parameters determined with respect to a second key associated with a letter in the candidate word adjacent to said letter and a second point in the input stroke pattern to which said second key is matched before adding said weighted distance to said sum of distances.

[c0012] 12. The method of Claim 11, wherein the magnitude of the adjustment made to said distance is further adjusted according to the distance between said first key and said second key.

[c0013] 13. The method of Claim 11, wherein the magnitude of the adjustment made to said distance is further adjusted according to the distance between said first matching input path point and said second matching input path point.

[c0014] 14. The method of Claim 11, wherein one of said parameters is determined as a function of a comparison of the slope of a line between said first key and said second key to the slope of a line between said first matching input path point and said second matching input path point.

[c0015] 15. The method of Claim 11, wherein one of said parameters is determined as a function of a comparison of the distance along a straight line between said first matching input path point and said second matching input path point to the distance along the actual input path between said first matching input path point and said second matching input path point.

[c0016] 16. The method of Claim 7, wherein when the distance

from the key associated with a letter in a possible candidate word to any potentially matching point in an input stroke pattern exceeds a maximum threshold distance, the word is eliminated as a candidate to match the input stroke pattern.

[c0017] 17. The method of Claim 7, wherein when the distance from the key associated with a letter in a possible candidate word to any potentially matching point in an input stroke pattern exceeds a maximum threshold distance, a determined penalty amount is added to the sum of the distances from which numerical scoring of said word is calculated.

[c0018] 18. The method of Claim 7, wherein when the distance from the key associated with a letter in a possible candidate word to any potentially matching point in an input stroke pattern exceeds a maximum threshold distance, a determined penalty amount is added to a determined factor by which the sum of the distances is multiplied in calculating the numerical scoring of said word.

[c0019] 19. The methods of Claim 16, Claim 17, and Claim 18, wherein said maximum threshold distance is determined with respect to the measured speed of the stylus in entering said input path.

[c0020] 20. The methods of Claim 7, Claim 8, and Claim 11, wherein the method of Claim 5 is used to determine a secondary numerical scoring of said identified one or more words, and wherein said secondary numerical scoring of said identified one or more words is used to establish a secondary relative ranking of said words, and wherein the difference is calculated between said secondary numerical score for the word ranked highest according to said first numerical scoring and said secondary numerical scoring for a second word, and wherein when said calculated difference in secondary scores falls below a determined threshold, an adjustment is made to the primary ranking established according to said first numerical scoring.

[c0021] 21. The method of Claim 2, further comprising comparing the numerical scores determined for the highest ranked word and the second-highest ranked word, and offering two or more of the highest ranked words of said determined relative ranking in a distinctive visual manner to the user for selection of the word to be input as text when the comparison between the numerical scores falls below a determined threshold.

[c0022] 22. The method of Claim 2 and Claim 3, further comprising comparing the numerical scores determined for the highest ranked word and the second-highest ranked

word, and generating a distinctive auditory signal to the user when the comparison between the numerical scores falls below a determined threshold.

[c0023] 23. The method of Claim 2 and Claim 3, further comprising comparing the numerical scores determined for the highest ranked word and the second-highest ranked word, and generating a distinctive visual signal to the user when the comparison between the numerical scores falls below a determined threshold.